

What is claimed is:

1. An isolated polypeptide, comprising a human mannosyl transferase having substantially the same amino acid sequence as shown as in SEQ ID NO:2, or a functional 5 fragment thereof.

2. The isolated polypeptide of claim 1, wherein said functional fragment further comprises a substrate binding domain.

10                   3.    An isolated nucleic acid, comprising  
substantially the same nucleotide sequence as shown as SEQ  
ID NO:1, or a fragment thereof.

4. The isolated nucleic acid of claim 3,  
further comprising encoding substantially the same amino  
15 acid sequence as shown as SEQ ID NO:2, or a functional  
fragment thereof.

5. The isolated nucleic acid of claim 3, wherein said fragment encodes a mannosyl transferase substrate binding domain.

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6. The isolated nucleic acid of claim 3,  
wherein said fragment further comprises an about 15  
nucleotide region sequence having substantially the same  
nucleotide sequence as SEQ ID NO:1.

25                    7. An isolated polypeptide, comprising a human  
mannosyl transferase having substantially the same amino  
acid sequence as shown as in SEQ ID NO:4, or a functional  
fragment thereof.

8. An isolated nucleic acid, comprising substantially the same nucleotide sequence as SEQ ID NO:3, or a fragment thereof.

9. The isolated nucleotide sequence of claim 8, wherein said fragment comprises a 5' nucleic acid region from human chromosome 9 and a 3' nucleic acid region from human chromosome 11.

10. An isolated nucleic acid, comprising a human mannosyl transferase encoding nucleic acid and a single nucleotide polymorphism.

11. The isolated nucleic acid of claim 10, wherein said single nucleotide polymorphism is selected from the group consisting of SEQ ID NOS:16 to 117.

12. A method of diagnosing or predicting the susceptibility of a bipolar disorder, comprising:

(a) contacting a sample obtained from an individual with a probe selective for an altered mannosyl transferase sequence, and

(b) detecting binding of said probe to an analyte in said sample, wherein specific binding of said probe indicates the presence of an altered mannosyl transferase and occurrence or susceptibility of a bipolar disorder.

13. The method of claim 12, wherein said probe comprises substantially the same nucleotide sequence as shown as SEQ ID NO:1, or a fragment thereof.

14. The method of claim 12, wherein said probe comprises substantially the same nucleotide sequence as shown as SEQ ID NO:3, or a fragment thereof.

15. The method of claim 12, wherein said probe  
5 comprises substantially the same nucleotide sequence as  
shown as SEQ ID NO:5, or a fragment thereof.

16. The method of claim 12, wherein said probe comprises a binding agent having specific binding activity to a polypeptide encoded by substantially the same  
10 nucleotide sequence as shown as SEQ ID NO:3, or a fragment thereof.

17. The method of claim 16, wherein said binding agent is an antibody.

18. A method of diagnosing or predicting the  
15 susceptibility of a bipolar disorder, comprising:

(a) measuring an expression or activity level of mannosyl transferase in a sample obtained from an individual, and

(b) comparing said measured expression or activity level of mannosyl transferase to mannosyl transferase expression or activity levels from a reference sample, wherein a reduction of said measured expression or activity levels compared to said reference sample indicates the occurrence or susceptibility of a bipolar disorder.

19. The method of claim 18, further comprising contacting said sample with a probe comprising substantially the same nucleotide sequence as shown as SEQ

20. The method of claim 18, further comprising contacting said sample with a probe comprising substantially the same nucleotide sequence as shown as SEQ ID NO:3, or a fragment thereof, wherein said contacting is effected under selective hybridization conditions.

22. The method of claim 18, further comprising contacting said sample with a binding agent having specific binding activity to a human mannosyl transferase having substantially the same amino acid sequence as shown in SEQ ID NO:2, or a functional fragment thereof, and detecting the presence of specific binding of said binding agent.

24. The method of claim 22, wherein said binding agent is a substrate analog inhibitor.

25            25. The method of claim 18, wherein said  
activity is measured by substrate conversion.

26. The method of claim 18, wherein said activity is measured by product formation.

27. The method of claim 18, further comprising measuring the presence of an intermediate of a lipid-  
5 linked oligosaccharide.

28. The method of claim 27, wherein said intermediate is lipid-linked Man<sub>6</sub>GlcNAC<sub>2</sub>.

29. The method of claim 18, wherein the  
10 expression or activity level of mannosyl transferase is  
measured by determining the presence of hypoglycosylated  
secretory proteins.

30. The method of claim 29, wherein said hypoglycosylated secretory proteins are characterized by a 15 reduction in N-linked glycosylation.

31. A method of identifying a compound that modulates the activity a mannosyl transferase, comprising:

(a) contacting a sample containing a mannosyl transferase having substantially the same sequence as SEQ ID NO:2, or a functional fragment thereof, and a substrate with a test compound under conditions that allow conversion of substrate to product, and

(b) measuring the amount of substrate conversion, a change in the amount of substrate conversion in the presence of said test compound indicating that said compound has mannosyl transferase modulatory activity.

32. The method of claim 31, wherein said compound increases the activity of mannosyl transferase.

5                    34. The transgenic non-human mammal of claim  
33, further comprising a disrupted mannosyl transferase  
gene.

35. The transgenic non-human mammal of claim 33, wherein said transgenic non-human mammal is a mouse.